

ZHURAVLEVA, Z.D.; DOBRONRAVOV, F.N.

Simplifying and speeding up the purification of juice. Sakh.
prom. 35 no. 1:24-29 Ja '61. (MIRA 14:1)

1. Moskovskiy tekhnologicheskii institut pishchevoy promyshlennosti
(for Zhuravleva). 2. Novo-Troitskaya gruppovaya laboratoriya
(for Dobronravov).
(Sugar manufacture)

DOBRONRAVOV, F.N.

Testing the operation of a double-helix diffuser. Sakh.prom. 36 no.11:
31-33 N '62. (MIRA 17:2)

1. Gruppovaya laboratoriya Soveta narodnogo khozyaystva KirgSSR.

DOBRONRAVOV, F.N.; BESPALOVA, V.S.

Experience in the receiving, storage, and processing of sugar
beets harvested with the continuous method in Kirghizistan.
Sakh.prom. 37 no.9:46-48 S '63. (MIRA 16:9)

1. Novo-Troitskiy sakharney zavod.
(Kirghizistan—Sugar beets)

DOBROMIRAVOV, I.N., inzh.

Organizing steady production flow at the "Ivtekmash" Plant.
Trudy LIEI no.22:156-174 '58. (MIRA 11:12)

1. Ivanovskiy zavod tekstil'nogo mashinostroyeniya.
(Ivanovo--Textile machinery)

TARASOV, G., mayor; DOBRONRAVOV, M., kapitan

Learn to load automobiles on flat cars rapidly. Tyl i snab.Sov.
Voor.Sil 21 no.3:83-86 Hr '61. (MIRA 14:6)
(Automobiles--Transportation)

IOFFE, A. (Leningrad); DOBRONRAVOV, N. (Leningrad)

Observations concerning the spreading of X-ray impulses. Magy fiz
folyoir 8 no.3:255-258 '60. (EEAI 10:1)
(X rays)

DOBRONRAVOV, N.F.; GERASIMOVA, A.M.

Return of the suspension from settling tanks to predefecation.
Sakh.prom. 32 no.10:21-26 0 '58. (MIRA 11:11)

1. Novo-Troitakaya gruppovaya laboratoriya.
(Sugar manufacture)

DOBROBRAYOV, N. I.

Beseda o kolese (Talk about the wheel) Moskva, Izd-vo Akademii Nauk SSSR, 1951.

51 p. Illus., diags.

At head of title: Akademiya Nauk SSSR.

SO: M/5
660
.D6

USSR / Diseases of Farm Animals. Diseases of Unknown Etiology. R-3

Abs Jour: Ref Zhur-Biologiya, No 16, 1958, 74241

Author : Dobronravov, N.N.

Inst : Leningrad Institute for Improvement of Veterinarians

Title : Some Materials on White Muscle Disease in Young Farm Stock in Arkhangel'skaya Oblast

Orig Pub: Sb. nauchn. tr. Leningr. in-t usoversh. vet. vrachet 1957, vyp. 11, 170-171

Abstract: A disease of unknown etiology is described which predominantly infects 15-day-old colts. Separate cases of the disease were noted in two and three year old colts, as well as in calves and lambs. The disease runs an acute course (from several

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21

USSR / Diseases of Farm Animals. Diseases of Unknown Etiology R-3

Abs Jour: Ref Zhur-Biologiya, No 16, 1958, 74241

hours to two days) and appears with sharp heart irritability, tachycardia, strong dyspnea, diaphoresis; before death, there appear edemas of the submaxillary space and gill, swelling of the tongue with whitish deposits. Body temperature is normal. Bac. perfringens was systematically isolated from the organs of dead colts; however, the role of this microbe in the etiology of the disease is not clear. Pathological-anatomic changes in the colts are described. -- L. S. Kirichenko

Card 2/2

ACC NR: AT7004344 (A,N) SOURCE CODE: UR/2657/66/000/015/0058/0076

AUTHOR: Dobronravov, O. Ye.; Rakitin, V. V.; Chugunov, A. V.

ORG: none

TITLE: Investigation of the dynamics of voltage-pulse tunnel-diode elements

SOURCE: Poluprovodnikovyye pribory i ikh primeneniye; sbornik statey, no. 15, 1966, 58-76

TOPIC TAGS: logic element, tunnel diode

ABSTRACT: Single-diode monostable and bistable and two-diode monostable logic circuits are considered, as is a two-diode bistable storage element. Operation of these circuits under different conditions and their interaction (when used jointly) was investigated on an analog computer. A universal trigger circuit with GaAs tunnel diodes was tested as a shift register, counter element, etc. The maximum

Card 1/2

UDC: 621.382.014.2:621.382.233

ACC NR: AT7004344

working frequency of the circuit exceeded 20 Mc, and the delay per element was 1 nsec. In a Soviet Editor's comment added to the article, it is pointed out that the practical use of the above circuit "is connected with great difficulties because, with a threshold equal to 15% peak current, the gain of the elements does not exceed 2-3." Orig. art. has: 12 figures and 30 formulas.

SUB CODE: 09 / SUBM DATE: none / ORIG REF: 001 / OTH REF: 003

Card 2/2

ACC NR: AM6015015

Monograph

UR/

Dobronravov, Oleg Yevgen'yevich (Candidate of Technical Sciences); Kirilenko, Yuriy Innokent'yevich (Candidate of Technical Sciences, Docent)

Principles of automatic control, automata and aircraft control systems (Osnovy avtomaticheskogo regulirovaniya, avtomaty i sistemy upravleniya letatel'nykh apparatov) Moscow. Izd-vo "Mashinostroyeniye". 1965. 450 p. illus., biblio. Errata slip inserted. 5500 copies printed. Textbook for aviation technical schools.

TOPIC TAGS: nonlinear automatic control, automatic control design, aircraft control equipment, flight control system, linear control system, remote control system, engine control system

PURPOSE AND COVERAGE: The theoretical principles of automatic control for linear and nonlinear systems are discussed and their functional and dynamic elements described. The fundamentals of the theory of gyroscopes, autopilots, and flight vehicle power plant control systems are reviewed. Brief data on guidance systems, radio remote control, and preset guidance is given. The book is intended for students in technical schools and may be useful to technical personnel in the aviation industry.

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UDC:629.13:62-553(075.2)

ACC NR: AM6015015

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Part II. The Principles of the Theory of Automatic Regulating Systems

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ACC NR: AM6015015

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Bibliography -- 447

SUB CODE: 13,01/ SUM DATE: 09Oct65/ ORIG REF: 039/

Card 3/3

1. DOBRONRAVOV, P. N.
2. USSR (600)
4. Labor, complicated
7. Labor of women with aequabiliter justo minor pelvis. Fel'd i akush. No. 4, 1952.
9. Monthly List of Russian Accessions, Library of Congress, August 1952, Unclassified.

DOBROBRAYOV, P. N.

USSR/Medicine - New Drugs

May/Jun 53

"The Application of the Domestic Protein Compound Ovoprotein in the Treatment of Women with Inflammatory Conditions of the Generative Organs," P. N. Dobronravov, Chair of Obstetrics and Gynecology, 1st Moscow Order of Lenin Medical Inst.

Akusher i Ginekol, No 3, pp 54-57

Ovoprotein is a domestic compound derived from eggs. It is a transparent, opalescent liquid with a 0.6% to 1.3% protein content, mostly the globulin fraction. It does not coagulate on boiling, retains its colloidal stability after sterilization, and may be used

270T35

parenterally. It is nontoxic and has some faint sensibilizing and antigenous properties. Administration of this compound in a dosage of 0.2 to 0.5 ml injected intermuscularly, intradermally or subcutaneously has proved effective in the control of Bartholinitis, urethritis, and other allied conditions, some of them of septic origin. Ovoprotein is recommended for wider use in medical institutions.

Of the Department of Obstetrics and Gynecology (Head-Prof. K. N. Zhmakin), First Moscow Order of Lenin Medical Institute.

270T35

DOBRONRAVOV, R. K.

CA

2

Chemical equilibria in reactions between hydrocarbons.
IX. Equilibrium in the reaction of polymerization of
isobutylene. R. K. Dobronravov and A. V. Frost.
J. Gen. Chem. (U. S. S. R.) 6, 1700 (1930); cf.
Avedenskii and Ivannikov, C. A. 29, 20571. --The equil.
const. involved in the catalytic polymerization of iso-
butylene and depolymerization of its polymers: 2 iso-
C₄H₈ ⇌ C₈H₁₆ (di-isobutylene) over fluoridin, in the temp.
interval 108-313°, was found to be related to the temp. in
accordance with the empirical equation: $\log K = \log$
 $(P_{C_8H_{16}}/P_{C_4H_8}^2) = (2930/T) + 0.049 = 0.007$, where
 $P_{C_8H_{16}}$ and $P_{C_4H_8}$ are partial pressures of isobutylene
and diisobutylene.
S. L. Madorsky

ASM-11A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSING AND PROPERTIES INDEX																			
<p>2461. KINETICS AND MECHANISM OF CATALYTIC HYDROGENATION OF HYDROCARBONS. II. Vredenskii, A. A., Detschavay, R. K. and Frost, A. V. (J. Gen. Chem. (U.S.S.R.), 1946, 16, 71-6; U.O.P. Surv. For. Petrol. Lit., Transl. 631, 1946).</p> <p>In hydrogenation of benzene over Pd black at 240° and atm. pressure the rate of hydrogenation is independent of the partial pressure of benzene within the limits of 0.1-0.45 atm. Hydrogenation of benzene under the above conditions is retarded by cyclohexane long before equilibrium is approached. In the absence of this retarding effect the reaction velocity is virtually independent of the ratio of the concns. of H₂ and C₆H₆, if the latter concn. is not too small. It is likely that hydrogenation occurs between C₆H₆ adsorbed on the catalyst and H₂ dissolved in the latter.</p>																			
<p>550-55.4 METALLURGICAL LITERATURE CLASSIFICATION</p>																			
<p>550-55.4 METALLURGICAL LITERATURE CLASSIFICATION</p>										<p>550-55.4 METALLURGICAL LITERATURE CLASSIFICATION</p>									

DOBROMIRAVOV, S. H.

DOBROMIRAVOV, S. H.- "Electrocardiographic Investigations in Static Work." Sverdlovsk State Med Inst, Sverdlovsk, 1955 (Dissertations for Degree of Candidate of Medical Sciences)

SO: Knizhnaya Leta is' No. 26, June 1955, Moscow

DOBRONRAVOV, S.N.

Apparatus for analyzing electrocardiographic or other oscillographic records. Fiziol.shur. 44 no.2:173-175 F '58. (MIRA 11:5)

1. Kafedra normal'noy fiziologii Meditsinskogo instituta, Sverdlovsk.
(ELECTROCARDIOGRAPHY, appar. & instr.
appar. for analyzing ECG records (Rus)
(OSCILLOMETRY, appar. & instr.
appar. for analyzing oscillographic records (Rus)

SKRYABIN, V. V.; SHABUNIN, R. A.; DOBRONRAVOV, S. N. (Sverdlovsk)

Characteristics of the function of the cardiovascular system under static stress. Gig. truda i prof. zab. no.1:39-45 '62.

(MIRA 15:2)

1. Sverdlovskiy meditsinskiy institut.

(CARDIOVASCULAR SYSTEM) (STRESS(PHYSIOLOGY))

DOBRONRAVOV, S.N.; FISHELEV, Ya.R.

"Cutaneous vision." Biul. eksp. biol. i med. 58 no.8:13-16 Ag '64.
(MIRA 18:3)

1. Laboratoriya "kozhnogo zreniya" Sverdlovskogo pedagogicheskogo
instituta. Submitted June 18, 1963.

DOBRONRAVOV, V.I., prof.

Timofei Pavlovich Pavlov, outstanding representative of Russian
dermatovenerology. Vest.derm.i ven. 34 no.12:55-59 '60.
(MIRA 14:1)

(PAVLOV, TIMOFEI PAVLOVICH, 1860-)

KARAKOZOV, I.G., zaslužennyi vrach RSFSR, red.; DOBRONRAVOV, V.A., zam. red.;
KARAKOZOV, I.G., otv. red.; GALANOVA, V.V., tekhn. red.

[Collection of works on research and practice of the F.E.Dzerzhinskii
Polyclinic] Sbornik nauchno-prakticheskikh rabot. Moskva, Medgiz.
No.2. 1961. 239 p. (MIRA 14:8)

1. Moscow. Poliklinika im. F.E.Dzerzhinskogo.
(MEDICINE, INTERNAL) (PUBLIC HEALTH)

DOBRONRAVOV, V.A.

Importance of scientific as well as practical work in a
polyclinic. Sbor.nauch.-prak.rab.Poliklin.im.F.E.Dzerzh.
no.2:11-13 '61. (MIRA 1684)
(CLINICS)

DOBROSTAVOV, V. M.

"The Basic Features of the Scientific Approach and Work of I. P. Pavlov."

Vestnik venerologii i dermatologii (Bulletin of Venerology Dermatology),
No 1, January-February 1954, (Moscow), Moscow.

D. Dobronravov, V.P.

DOBRONRADOV, V.P.; SHAKHUROV, D.V.

Catching tarbagans in steel traps. Tez. i dokl.konf.Irk.gos.nauch.-
issl.protivochum. inst. no.2:10-11 '57. (MIRA 11:3)
(MARMOT HUNTING)

DOBRONRAVOV, V., prof., doktor fiz.-matem.nauk

New stage in the conquest of space. Kryl. rod. 15 no.12:4-5 D '64.
(MIRA 18:3)

DOBRONRAVOV, V. V.

"Generalization of Hamilton-Jacobi's Theorem to Quasi-Coordinates," Dokl. AN
SSSR, 22, No.8, 1939

Hydrometeorological Inst., Moscow

DOBRONRAVOV, V. V.

"On the Invariance of the Hamilton-Jacobi Equation in Quasi-Coordinates,"
Dokl. AN SSSR, 42, No.6, 1943

Moscow State U.

DOBRONRAVOV, V. V.

"On the Integrability of Hamilton-Jacobi Equation in Quasi-Coordinates,"
Dokl. AN SSSR, 43, No.3, 1944

DOBRONRAVOV, V. V.

"Poisson's Theorem in Non-Holonomic Coordinates," Dokl. AN SSSR, 44, No.6, 1944

DOBRONRAVOV, V. V.

"Integral Invariants of the Equations of Analytical Dynamics in Non-Holonomic Coordinates," Dokl. AN SSSR, 46, No.5, 1945

coordinates. Uchenye Zapiski Moskov. Gos. Univ. Meka-

old form, as if it were true coordinates. Not so with second-

in content. It presents a step-by-step recasting of the stand-

"APPROVED FOR RELEASE: 06/12/2000

CIA-RDP86-00513R000410620007-1

APPROVED FOR RELEASE: 06/12/2000

CIA-RDP86-00513R000410620007-1"

1. DOBRONRAVOV, V. V.

2. USSR (600)

4. Motion

7. Some new correlations concerning the problem of motion of a solid body around a fixed point.
Trudy Mosk.inst.khim.mash. no. 2, 1950:

9a Monthly List of Russian Accessions, Library
of Congress, April 1952, UNCLASSIFIED.

Moscow Chemical Machine Building Institute

1. DOBRONRAVOV, Y. Y.
2. USSR (600)
4. MECHANICS, ANALYTIC
7. Applying a method of non-holonomial coordinates to some problems of the mechanics of continuous media. Vest. Mosk. un. 5 no. 9, 1950.
9. Monthly List of Russian Accessions, Library of Congress October 1951. UNCLASSIFIED.

DOBRONRAKOV, V. V.

Dynamics

Some relationships in the problem of motion of a solid body
around a fixed point in Euler's case. Uch.zap.Mosk.un.,no.154,1951.

Monthly List of Russian Accessions, Library of Congress,
May 1952, UNCLASSIFIED.

DOBRONRAVOV, V. V.

PA 241T74

USSR/Mathematics - Nonholonomic Nov/Dec 52

"Criticism and Bibliography: Certain Problems of the Mechanics of Nonholonomic Systems," V. V. Dobronravov

"Priklad Matemat i Mekhan" Vol 16, No 6, pp 760-764

Discusses the interposability of the operations of differentiation and variation ($\delta \int x^i - \delta x^i = 0$); the applicability of eqs of the Volterra type to systems with nonholonomic connections; eqs of nonholonomic connections and the process of derivation of eqs of motion; generalization of Jacobi's method to the case of nonholonomic mechanical systems. Submitted 29 Jun 52.

241T74

DOBRONRAVOV, V.V.

~~DOBRONRAVOV, V.V.~~
Lagrange theorem in non-holonomic coordinates. Trudy Inst.mat. i mekh.
AN Uz.SSR no.10:186-190 part 2. '53. (MIRA 8:4)
(Dynamics)

DOBRONRAVOV, V. V. and GOLUBEV, V. V.

At a joint session with the Moscow Society of Naturalists, the Mechanico-mathematical and Physical Faculties of Moscow University, and Moscow higher technical institutions, on the occasion of the 10th anniversary of S. A. Chaplygin's death, V. V. GOLUBEV spoke on Chaplygin's works in aerodynamics and hydrodynamics and V. V. DOBRONRAVOV spoke on his works in mechanics. Uspekhi Matematicheskikh Nauk, Vol 8, No 2 (54), pp 159-167.

DOBRONRAVOV, V.V.

VARVAROV, N.A.; DOBRONRAVOV, V.V., professor, doktor fiziko-matematicheskikh nauk; MERKULOV, I.A., inzhener-konstruktor; SERIAPIN, A.D., laureat Stalinskoy premii; STANYUKOVICH, K.P., professor, doktor tekhnicheskikh nauk; KHEVTSSEVICH, Yu.S., kandidat tekhnicheskikh nauk; SHTERNFEL'D, A.A., laureat mezhdunarodnoy poashchritel'noy premii po astronomii.

Enroute to the stars. Tekh.mol. 22 no.7:1-7 J1 '54.

1. Predsedatel' sektiia astronomii pri Tsentral'nom aeroklube SSSR imeni Chkalova (for Varvarov).
 2. Zamestitel' predsedatelia nauchno-tekhnicheskogo komiteta po kosmicheskoy navigatsii, sektiia astronomii (for Dobronravov).
 3. Predsedatel' nauchno-tekhnicheskogo komiteta po raketnoy tekhnike, sektiia astronomii (for Merkulov).
 4. Predsedatel' nauchno-tekhnicheskogo komiteta po biologii kosmicheskogo poleta, sektiia astronomii (for Seryapin).
 5. Chlen nauchno-tekhnicheskogo komiteta po astronomicheskim i fizicheskim problemam (for Stanyukovich), sektiia astronomii.
 6. Predsedatel' nauchno-tekhnicheskogo komiteta po radio-teleupravleniyu (for Khevtsevich), sektiia astronomii.
 7. Predsedatel' nauchno-tekhnicheskogo komiteta po kosmicheskoy navigatsii (for Shternfel'd), sektiia astronomii.
- (Interplanetary voyages) (Space ships) (MLRA 7:6)

DOBRONRAVOV, V. V. , ed.

N/5
613
.D6

Mekhanika. Mechanics. Moskva, Oborongiz, 1955.
380 P. illus., diags., graphs. (Moscow. Vyssheye Tekhnicheskoye Uchilishche,
no. 50)
Bibliography throughout.

DOBROBRAYOV, V. V.

"Concerning a Center of Deviation," by Anton Bilimovic, Zb. radova Srpska AN, No 43, 1955, pp 63-66 (from Referativnyy Zhurnal -- Mekhanika, No 1, Jan 57, Abstract No 46, by V. V. Dobronravov)

"The kinetic moment G of a solid body moving around a fixed point is resolved into two vectors, one which is collinear with the vector representing the instantaneous angular velocity and one which is perpendicular to the angular velocity:

$$G = I_w \omega - S_D \omega$$

Here I_w is the moment of inertia of the body relative to the instantaneous axis of rotation, and S_D is a vector having the dimension of the moment of inertia and is connected with the location within the body of a certain point which the author calls the center of deviation." (U)

Sum 1245

DOBROBRAYOV, Vladimir Vasil'yevich, doktor fiziko-matematicheskikh nauk, professor; ISLANKINA, T.F., redaktor; ISLANKINA, P.G., tekhnicheskii redaktor.

[Cosmic navigation] Kosmicheskaya navigatsiya. Moskva, Izd-vo "Znanie", 1956. 30 p. (Vsesoyuznoe obshchestvo po rasprostraneniю politicheskikh i nauchnykh znaniy. Ser.4, no.7).

(MLRA 9:5)

1. Nauchnyy rukovoditel' seksii astronomiki pri Tsentral'nom aeroklube SSSR imeni V.P.Chkalova (for Dobrobrayov).

(Interplanetary voyages)

DOBRONRAVOV, V.

DOBRONRAVOV, V. The artificial satellite of the earth. Tr. from the Russian.
p. 20. Laminar gliders. p. 23.

Vol. 2, no. 12, Dec. 1956
ARIPILE PATRIEI
TECHNOLOGY
Rumania

So: East European Accession, Vol. 6, No. 5, May 1957

AID P - 4905

Subject : USSR/Aeronautics - Miscellaneous
Card 1/1 Pub. 58 - 11/12
Author : Dobronravov V., Professor, Doctor of Physico-Mathematical
Sciences.
Title : The artificial satellites of the earth
Periodical : Kryl. rod., 8, 19-22, Ag 1956
Abstract : The author outlines, in a popular form, the scientific
aspects of the problem of creating artificial earth
satellites, and indicates schematically how this problem
may be solved in practice. The U.S. experiences with
Wac-Corporal and those organized by the University of
Iowa are mentioned. 6 designs.
Institution : None
Submitted : No date

DOBONRAVOY, V.V. (Moskva)

Setting up adequate stability criteria. Avtem. i telem. 17 no.3:
211-216 Mr '56. (MIRA 9:7)
(Automatic control) (Servomechanisms)

DOBRONRAVOV, V.V., doktor fiziko-matematicheskikh nauk, professor.

Cosmic navigation. Nauka i zhizn' 23 no.10:19-22 0 '56.
(MLRA 9:11)
(Interplanetary voyages)

DOBRONRAVOV, V.V., doktor fiziko-matematicheskikh nauk professor.

The Department of Mechanics in Moscow Technical College, brief
outline of the work of the department for 125 years. [Trudy]
MVTU no.50:3-8 '56. (MLRA 9:8)

(Moscow--Technical education)
(Engineering--Study and teaching)

DOBONRAVOV, V. V.

"On the Basic Circumstances of the Mechanics of Nonholonomic Systems," by V. V. Dobronravov, Doctor of Physicomathematical Sciences, Mekhanika, No 50, Moscow Higher Technical School, Oborongiz, Moscow, 1956, pp 50-74

The author cites three problems which came up in the study of systems with linear nonholonomic bonds. The first problem relates to the derivation of equations of motion and may be divided into two groups: in the first group, the nonholonomic bond equations are used in the very beginning of the derivation of equations of motion, while in the second group, the nonholonomic bond equations are considered in the finally derived equations of motion. The difference in the derivation of the derivation of the equations is illustrated by an example of a mechanical system with determining coordinates q_1 , q_2 , and q_3 , which comply with the equation of nonholonomic bonds:

$$q_1 = q_3 q_2$$

The second problem comes down to generalizing, for the case of linear nonholonomic bonds, the basic theorems of analytical mechanics: the theory of canonic equations, Hamilton-Jacobi, Poisson's theorems, etc. The author believes that nonholonomic coordinates or quasicoordinates play an important role here.

The third problem is closely related to the second and consists in the application of permutation variations, Descartes differentials, and Lagrange coordinates to nonholonomic systems.

Sum 1258

12/11/1957 V.V.

KAZNEVSKIY, Viktor Pavlovich; ~~DOBROBRAYOVA, V.V.~~, Professor, doktor fiziko-
matematicheskikh nauk, nauchnyy redaktor; BASHKATOV, S.S., redaktor;
KARYAKINA, M.S., tekhnicheskiiy redaktor

[Scouts in interplanetary spaces] Razvedchiki mezhpplanetnogo pro-
stranstva. Pod nauchnoi red. V.V.Dobronravova. Moskva, Izd-vo
DOSAAF, 1957. 103 p.
(Rockets (Aeronautics)) (MIRA 10:11)

3703 KONKHOV, V.

5' Na Pail v Kozmos. A. Poludniyev
Krylov, Kozlov, June, 1967, pp. 30-32.
In Russian. Discussion of developments
for the geophysical year and means of at-
taining future goals.

DOBROKRAVOV, V.V.
DOBROKRAVOV, V.V. doktor fiz.-mat.nauk, prof.

The Soviet earth satellites. Elektrichestvo no.12:1-2 D '57.

(MIRA 10:12)

(Artificial satellites)

Name : DOBRONRAVOV, V. V.

Title : Doctor of Physical and Mathematical Sciences, Professor

Remarks : According to an article entitled "An Interesting Lecture", Professor Dobronravov delivered a lecture entitled "Problems of Space Flight" at the "Lenin" Military-Political Academy on October 8, 1957. Besides discussing interplanetary flight and the launching of Sputnik I, he discussed "in detail the characteristics of the inter-continental ballistic rocket."

Source : N: Krasnaya Zvezda, No. 239, 9 October 1957, p. 3, c. 5-6

85-57-12-4/29

AUTHOR: Dobronravov, V.[✓], Professor, Doctor of Physico-Mathematical Sciences

TITLE: First Step Into Outer Space (Pervyy shag v kosmos)

PERIODICAL: Kryl'ya rodiny, 1957, Nr 12, pp 2-3 (USSR)

ABSTRACT: The author discusses the launching of Sputniks I and II and foresees the construction of space ships which will make possible interplanetary travel by man. He states that despite the relatively small weight of Sputnik I (83.6 kg), it carried a large amount of equipment, and he considers the installation of the 4 automatically positioned rod antennas, 2.4 to 2.9 m long, to be one of its most interesting features. Similar designs of more complex form serving other purposes, for example, automatically operated landing gears for an interplanetary space ship, are entirely possible. The rotation of an artificial satellite around its own axis depends upon whether it is given an initial rotary movement when separated from the shell of the rocket. Satellites equipped with antenna rods will have their own additional rotations, which will be slow and will not damage the equipment. The successful launching of Sputnik I demonstrated a perfect system of

Card 1/3

85-57-12-4/29

First Step Into Outer Space

automatic radio-electronic control of the rocket carrier. Soviet technology has shown itself to be capable of producing engines powerful enough for flights to the moon and, possibly, to other planets. Future satellites will increase in size and weight, which will permit the installation of more powerful high-quality equipment. They will be used for relaying radio and telecommunications between distant points on the earth's surface. These will at first be launched from the earth and return to it. Rockets with a fuel supply may themselves eventually become satellites. Manned satellites are predicted, as well as the possibility of transferring rockets from one orbit to another and joining them together to form large orbital space stations. The establishment of such space stations and the necessary preparations to enable man to survive flights into outer space are prerequisites for organizing distant interplanetary flights by man to the nearest celestial bodies, such as the moon, Venus and Mars. Sputnik II contained instruments registering the radiation of the sun in the short-wave

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First Step Into Outer Space

85-57-12-4/29

ultra-violet, and X-ray parts of its spectrum, and devices for the study of cosmic rays, temperature, pressure, and other physical properties of space. It also carried a dog, making it possible to obtain valuable data on the heart and breathing action of a living being. There is 1 sketch.

AVAILABLE: Library of Congress

- Card 3/3
1. Satellites-Launching Characteristics
 2. Satellites-Motion
 3. Satellites-

Dobronravov, V. V.

84-12-5/49

AUTHOR: Dobronravov, V., Professor, Doctor of Physical and Mathematical Sciences

TITLE: Toward the Conquest of Interplanetary Space (Na puti osvoyeniya mezhplanetnogo prostranstva)

PERIODICAL: Grazhdanskaya aviatskiya, 1957, Nr 12, pp 3-5 (USSR)

ABSTRACT: The author deals with the present and future of interplanetary travel. The launching of two earth satellites in October and November 1957, is described as a direct result of the creation and successful testing in the USSR of intercontinental ballistic missiles. A statement made by N. S. Khrushchev is quoted, to the effect that the Soviet Union is capable of launching dozens of satellites, if necessary, since it is only a matter of replacing the hydrogen-bomb warhead of the ICBM by a satellite. The range of an ICBM is put at 8,000 to 12,000 km, depending on the initial speed of the ballistic flight. This speed is equal to 6-7 km/sec, the time from launching to the impact being 30 minutes. Earth satellites need a higher speed, on the order of 8 km/sec after the rockets quit, to remain in orbit for a prolonged period. The first Soviet satellite was a ball 58 cm in diameter, weighing 83.6 kg. The second satellite contained 508.3 kg of instruments alone, and the apogee

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Toward the Conquest of Interplanetary Space

84-12-5/49

of its orbit reached 1700 km. It carried a dog in an airtight compartment which was equipped to maintain the life of the animal for 7 days and instruments for recording all the functions of the organism during the first period of flight with high acceleration rates. The data transmitted back to the earth constitute valuable information for the organization of manned space flights. The first step toward interplanetary travel is seen in launching heavier and larger satellites with test animals and better instruments. Effort to create recoverable satellites will be stepped up; this would widen the field of experimentation with living creatures. Finally, recoverable and navigable rockets and satellites will carry men, although a number of serious problems concerning the ability to withstand acceleration, adaptation to weightlessness, and conditions of existence in space, must be solved first. It is not known, for example, how weightlessness would affect blood circulation and heart function, and what would happen to the organs of equilibrium and orientation. The experiences of the dog Layka of the second Soviet satellite are said to be encouraging. A passenger aircraft in 1975, it is predicted, may be similar in many respects similar to a ballistic missile or even to a single-stage rocket, taking off and landing in a vertical position. Navigable satellites and ballistic aircraft must provide for the normal functioning of living organisms inside and outside the hull. Air regeneration and air conditioning, and maintaining the proper temperature and pressure are the main problems within the hull. A special space suit must be developed for men to carry out various operations outside the ship's hull, such as those necessary in the space

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Toward the Conquest of Interplanetary Space

84-12-5/49

stations which will certainly be put into operation. At least $.5 \text{ kg/cm}^2$ pressure must be maintained inside the suit, together with an adequate supply of oxygen. The first interplanetary flight will probably be of the ballistic type. A ballistic flight to the Moon would require an initial speed about 3 km/sec higher than that of the earth satellites. One-way flight would take one to five days. Only a 2.4-km/sec speed is necessary to leave the Moon for the Earth. It is possible that the first flight to the Moon will be performed by a guided rocket which will photograph the entire surface of the Moon and return. The rocket may also land on the Moon and send out a vehicle for surveying the surface and transmitting the information back via television. The immediate future will show the actual development. A sketch and 3 photographs accompany the text.

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Card 3/3

DOBRONRAVOV, V.V., doktor fiziko-matemat.nauk, prof.

We shall see it. Nauka i zhizn' [24] no.11:32 [N] '57. (MIRA 10:11)
(Interplanetary voyages)

DOBROMRAVOV V.V.
DOBROMRAVOV, V.V., prof.

First step into space. Rabotnitsa 35 no.11:17-18 N '57. (MIRA 11:2)
(Artificial satellites)

Name : DOBRONRAVOV, ^{✓✓} B.

Title : Professor, Doctor of Physical and Mathematical Sciences

Remarks: Professor Dobronravov has written an article, "Start of the Era of Conquest of Interplanetary Space", which surveys the current and anticipated developments in space flight.

Source : N: Promyshlenno-Ekonomicheskaya Gazeta, No. 121,
9 October 1957, p.1, c. 5-7; p.2, c. 1-2

Name : DOBRONRAVOV, V. V.

Title : Professor, Doctor of Physical and Mathematical Sciences

Remarks : In an article entitled "From a Cosmic Laboratory to an Interplanetary Ship" Professor Dobronravov writes that the launching of the sputniks was the first step towards the mastery of interplanetary space. The success of the launching was due in great part to the high-speed electronic computing machines which did the complex computations of the rocket. The second sputnik was launched from the northern part of the Soviet Union. In spite of the great weight of the scientific and measuring apparatus of Sputnik II it was put into orbit at a higher speed than Sputnik I, in order to prolong its life.

Source : N: Sovetskaya Aviatsiya, No. 262, 5 November 1957, p. 3, col. 1-3

VASIL'YEV, Mikhail Vasil'yevich; DOBRONRAVOV, V.V., prof., doktor
fiziko-matemat.nauk, nauch.~~nyy~~ red.; ~~GONCHIKOVA~~, V.A., red.;
ROZEN, E.A., tekhn.red.

[Space voyages] Puteshestviia v kosmos. Moskva, Izd-vo
"Sovetskaiia Rossiia," 1958. 244 p. (MIRA 12:9)
(Interplanetary voyages)

DOBROBRAYEV, V.V.

<p>PHASE I BOOK EXPLOITATION 307/A693</p> <p>Makoshchenniy Ekspozitsionnyy (Unpublished Path of the Universe) Moscow, 1980, 1980, 63 p. 11) (Mirovaya Ekspozitsionnyy prinyat, "no. 11) 11,000 copies printed.</p> <p>Ed.: V. Kuznetsov; Tech. Ed.: L. Novikova.</p> <p>PURPOSE: This popular science booklet is intended for the general reader.</p> <p>CONTENTS: The booklet contains 18 articles dealing with early space exploration and the development of space science. The articles are written by leading Soviet scientists in the field. The contributions of L. K. Tikhonov to space science are briefly presented. Satellites, space robots, future space craft, and certain pertinent engineering problems are discussed. No personalities are mentioned. No references are given.</p>	
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ISAKOV, Petr Kuz'mich; KAZNEVSKIY, Viktor Pavlovich; LUTSKIY, Valeriy Konstantinovich; RAPOPORT, Tamara Lyudvigovna; DOBRONRAVOV, V.V., prof., retsenzent; FOMIN, N.A., prof., retsenzent; MERKULOV, I.A., retsenzent; IL'YASHENKO, S.M., kand.tekhn. nauk, retsenzent; VARVAROV, N.A., retsenzent; PANTELEYEV, V.G., retsenzent; GLUKHOV, V.V., retsenzent; GORODENSKIY, L.M., red.; FURMAN, G.V., tekhred.

[Artificial earth satellites; 100 questions and answers]
Iskusstvennyye sputniki zemli; 100 voprosov i otvetov. Pod red. V.P.Kaznevskogo. Moskva, Obshchestvo po rasprostraneniю polit. i nauchn.znaniy, 1959. 95 p. (MIRA 12:6)
(Artificial satellites)

DOBRONRAVOV, V.V.

28(0); 10(2); 25(2)

PHASE I BOOK EXPLOITATION

SOV/2036

Moscow. Vyssheye tekhnicheskoye uchilishche imeni N. E. Baumana

Mekhanika; sbornik statey (Mechanics; Collection of Articles) Moscow, Oborongiz, 1959. 119 p. (Series: Its: Trudy vyp. 92) 3,400 copies printed. Errata slip inserted.

Ed. (Title page): V. V. Dobronravov, Doctor of Physical and Mathematical Sciences, Professor; Ed. (Inside book): Ye. V. Latynin, Engineer; Ed. of Publishing House: L. I. Sheynfayn; Tech. Ed.: V. P. Rozhin; Managing Ed.: A. S. Zaymovskaya, Engineer.

PURPOSE: This book is intended for scientific and research personnel, engineers, and students of advanced courses at instrument-making and machine design vuzes.

COVERAGE: This volume deals with problems frequently encountered in modern instrument making and in designing specialized machines and includes general theory of automatic control, vibrations, theoretical and applied gyroscopy, stability of motion, etc. Abstracts of the individual articles are given in the Table of Contents.

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Mechanics; Collection of Articles

SOV/2036

TABLE OF CONTENTS:

Preface V. V. Dobronravov

3

Astaf'yev, V. V. Assistant . A More Accurate Consideration of the Effect of the Motion of the Stationary Point of a Gyroscope on the Character of the Motion of the Gyroscope

5

The author discusses kinematic relationships, dynamic relationships, various cases of motion of the vehicle, and neglect of the quantity

$\frac{v_E}{R} \tan \psi$. He increases the accuracy of the classical results

obtained by B. V. Bulgakov, an outstanding Soviet gyroscopist, and which pertain to an investigation of the effect of the accelerations of an aircraft on the motion of a gyro pendulum as the basic element of some gyro instruments. In setting up the equations of motion of the gyro pendulum, the author takes into account the nonlinear terms

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Mechanics; Collection of Articles

SOV/2036

previously neglected, and a more exact map of the operation of the gyro pendulum emerges. The results obtained will unconditionally be useful in producing gyroscopes, the operating-accuracy requirements for which are increasing all the time. References:1 Soviet.

Orekhov, P. V. [Candidate of Technical Sciences, Docent]. Derivation of a Formula for the Gyroscopic Moment With the Aid of Coriolis' Dynamical Theorem

24

This article shows the derivation of the formula for the gyroscopic moment with the aid of Coriolis' theorem. The gyroscopic effect is encountered in many fields of instrument making and machine design so that a descriptive explanation of this phenomenon is very practical.

Shigin, Ye. K. [Research Fellow]. Nonlinear Automatic Control Systems With an Element Having Δ - type Characteristics

28

This paper develops a new control method using non-linear systems of a special form and having particular characteristics called Delta-characteristics. The method permits a considerable improvement of the transient process, reducing the amount of overshoot and the time

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Mechanics; Collection of Articles

SOV/2036

of the transient process. The concepts of the author may be useful particularly for obtaining desirable conditions in rapidly changing processes and phenomena. References: 5 Soviet.

Lobacheva, N. K. [Assistant]. Use of Galerkin's Method for Finding a Periodic Solution of the Differential Equations of Nonlinear Oscillations 49
This paper analyzes some peculiarities of modern methods for the study of nonlinear oscillations observed in various fields of instrument making. References: 5 Soviet, 2 translations from English.

Golenko, K. A. [Junior Scientist]. Flow of a Viscous Incompressible Fluid in a Rotating Cylinder 59
This paper presents an analytical study of the flow of a viscous fluid in a rotating cylindrical tube. The solution assumes the tube to be infinitely long and permits taking into account known angular accelerations of the tube. The solution has application to such practical problems as the supply of lubricant in piston engines and the cooling of turbine rotors. The analysis is also applicable to the inverse problem, that is, the effect of the internal motion of the fluid on the motion of the cylindrical body. References: 2 Soviet, 1 translation from English.

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Mechanics; Collection of Articles

Zamuruyev, G. I. [Assistant]. On a Method of Determining the Stability Criterion for the Operation of Liquid-Fuel Rocket Engines 66

This paper investigates a timely problem in modern rocket technology, namely, the problem of harmful fluctuations of pressures in the chamber of a liquid-fuel rocket engine occurring during the combustion process. The author investigates the entire hydraulic circuit supplying fuel to the combustion chamber and determines the parameters required for stability of the process. References: 2 Soviet, 1 translation into Russian.

Zakharov, Yu. Ye. [Research Fellow]. Determination of the Axial Hydrodynamic Force on the Valves of Hydraulic Servomechanisms 85

This report considers the processes taking place inside the valves of hydraulic servomechanisms. The phenomena associated with the flow of a viscous fluid inside a complex geometrical configuration with specific boundary conditions are of great importance in the investigation of the entire hydraulic servomechanism and, consequently, in setting up the equations of motion of the whole automatic-control system. References: 2 Soviet, and 1 English. 99

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Mechanics; Collection of Articles

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Litvin-Sedoy, M. Z. [Candidate of Physical and Mathematical Sciences, Senior Scientist in the Department of Applied Mechanics at the Moscow State University]. Determining Angular Orientation of a Body With Gyroscope Pickoffs When Arbitrary Distribution of the Axes of Their Cases Exists in a Body Moving in Three Dimensions 100

This paper presents results of use for a more rational calculation of multigyroscope systems. References: 5 Soviet, 1 English, and 1 translation from English.

Tarnovskaya, M. P. [Assistant]. Determination of the Minimum Dimensions of a Cam Gear With a Rotating Cam and a Pivoted Feeler 108

Tarnovskaya, M. P. [Assistant]. Calculation of the Optimum Profile of the Cam of a Cam Gear With a Rotating Cam and a Feeler With Translational Motion 114

These two reports contain original results of the author in the search for optimum cam gears (in the sense of minimum dimensions and some other requirements) for use in special machines.

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IS/1sb
8-11-59

PHASE I BOOK EXPLOITATION

307/4946

Mitshaylov, A. A., ed.

Stantsii v kosmos: sbornik statey (Space Stations; Collection of Articles) Moscow, Izd-vo AN SSSR, 1960. 444 p. 25,000 copies printed. (Series: Akademiya nauk SSSR. Nauchno-populyarnaya Seriya)

Resp. Ed.: A. A. Mitshaylov; Compiler: V. V. Fedorov; Ed. of Publishing House: Ye. M. Klyam; Tech. Ed.: I. D. Novichkova.

PURPOSE: This book is intended both for the space specialist and the average reader interested in space problems.

COVERAGE: The book contains 73 short articles by various Soviet authors on problems connected with space travel and the launching of artificial earth satellites and space rockets. Some possibilities of future developments are also discussed. The articles were published in the period of 1957-1960. No personalities are mentioned. There are no references.

Foreword

3
Korotkiy, A. V., Academician. A Daring Dream of Humanity Is Realized [October 3, 1958]

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Korotkiy, A. V., Academician. Great Victory of Soviet Science [October 16, 1957]

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I. ARTIFICIAL EARTH SATELLITES - TRIUMPH OF THE SOVIET SCIENCE AND ENGINEERING

25
Prozorov, I., Professor. Observation of Artificial Earth Satellites in Novosibirsk [July 26, 1957]

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Kulagin, S. G. Artificial Earth Satellites [August 17, 1957]

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TASS Information [October 8, 1957]

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Dobromirskiy, V. V., Doctor of Physical and Mathematical Sciences. On the Way to Mastering Interplanetary Space [October 9, 1957]

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Stanyukovich, K. P., Professor. The Road to the Stars [October 4, 1957]

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TASS Information [November 4, 1957]

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How the Second Sputnik Was Arranged [Izvestiya, November 14, 1957]

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Kashlarskiy, M. A., Candidate of Physical and Mathematical Sciences. The Road to Future Interplanetary Flights [November 12, 1957]

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VORONKOV, I.M., prof.; GERNET, M.M., prof.; DOBRONRAVOV, V.V., prof.;
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SVESHNIKOV, G.N., prof.; SLOBODYANSKIY, M.G., prof.; YABLONSKIY,
A.A., prof.; POGOSOV, G.S., dotsent

[Program in theoretical mechanics for majors in machinery
designing, mechanics, instrument designing, electrical engi-
neering, and construction at advanced technical institutions
(220 hours)] Programma po teoreticheskoi mekhanike dlia mashino-
stroitel'nykh, mekhanicheskikh, priborostroitel'nykh, elektro-
tekhnicheskikh i stroitel'nykh spetsial'nostei vysshikh tekhnii-
cheskikh uchebnykh zavedenii (220 chasov). Moskva, Gos.izd-vo
"Vysshaya shkola," 1959. 10 p. (MIRA 13:2)

1. Russia (1923- U.S.S.R.) Ministerstvo vysshego obrazovaniya.
(Mechanics, Analytical)

~~DOBROBRAYOV~~ V. prof., doktor fiz.-mat. nauk

First interplanetary flight. Kryl.rod. 10 no.2:9 F '59.
(MIRA 12:5)

(Space flight)

GURIN, A.I.; DOBRONRAVOV, V.V., prof., retsentsent; NIKITIN, N.N.,
detsent, nauchnyy red.

[Fundamentals of the mechanics of bodies with variable mass
and of rocket dynamics] Osnovy mekhaniki tel peremennoi
massy i reketodinamiki; uchebnoe posobie. Moskva, Mosk.
gorodskoi pedagog. in-t im. V.P.Potemkina. Pt.1. 1960. 225 p.
(MIRA 14:4)

(Rocketry)

(Mechanics, Analytic)

DOBRONRAVOV, V. V. (Moscow)

The principles of D'Alembert-Lagrange and Holder in nonholonomic systems. Izv mat inst BAN 4 no.2:3-9 '60.

(EEAI 10:9)

(Mechanical movements)

PREOBRAZHENSKIY, Aleksey Yuvenaliyevich; DOBRONRAVOV, V.V., prof., doktor
fiz.-matem.nauk, nauchnyy red.; ISLANKINA, T.F., red.; NAZAROVA,
A.S., tekhn.red.

[Secrets of the ocean of air] Tainy vozduhnogo okeana. Moskva,
Izd-vo "Znanie," 1961. 36 p. (Vsesoiuznoe obshchestvo po rasprostra-
nieniu politicheskikh i nauchnykh znaniy. Ser.4, Tekhnika, no.8)
(MIRA 14:7)

(Space flight)

(Cosmic physics)

DOBRONRAVOV, V.V., doktor fiziko-matematicheskikh nauk, prof.

New era in the history of mankind. Elektrichestvo no.6:1-4 Je '61.
(MIRA 14:10)

(Astronautics)

DOBRONRAVOV, V.^V, prof., doktor fiz.-matem.nauk

Man is in the process of conquering the space. Radio no.6:8-9
Je '61. (MIRA 14:10)
(Space flight) (Astronautics)

DOBRONRAVOV, V.V., prof., doktor fiziko-matematicheskikh nauk

Into the spaces of the universe. Vest.Vozd.Fl no.6:8-12 Je '61.

(MIRA 14:8)

(Astronautics)

DOBROBRAYOV VV

PHASE I BOOK EXPLOITATION

SOV/5687

Pokrovskiy, Georgiy Iosifovich, Petr Kuzmich Isakov, Igor' Alekseyevich Merkulov,
and Vladimir Vasil'yevich Dobronravov

Put' v kosmos (Road to Space) Moscow, Izd-vo "Znaniye," 1961. 44 p.
(Series: Vsesoyuznoye obshchestvo po rasprostraneniyu politicheskikh i
nauchnykh znaniy. Seriya IV, 1961: Tekhnika, no. 13) 40,000 copies printed.

Ed.: T. F. Islankina; Tech. Ed.: L. Ye. Atroshchenko.

PURPOSE: This booklet is intended for general readers.

COVERAGE: This is a collection of 4 popular-type articles in which some data
on Yu. A. Gagarin's space flight are given and fundamentals of space flights
are discussed. Several diagrams of satellite trajectories are given, and
three photos of Gagarin and of a man in weightlessness test appear in the
text. No personalities are mentioned. There are no references.

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Road to Space

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AVAILABLE: Library of Congress

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AC/rn/mas
10-17-61

DOBRONRAVOV, V., prof. doktor fiziko-matematicheskikh nauk

Dynamics of the space ship. Vest. Vozd. Fl. no.9:85-88 S '61.
(MIRA 14:11)
(Navigation (Astronautics))

S/085/61/000/005/001/001
D036/D043

AUTHOR: Dobronravov, V., Professor, Doctor of Physico-Mathematical Sciences

TITLE: A victory for human genius

PERIODICAL: Kryl'ya rodiny,¹² no. 5, 1961, 4-6

TEXT: The author gives the general scientific background of Gagarin's space flight, which is presented as a success of the Communist system. The scientific basis for this flight was first laid by such notable Russian scientists and thinkers as S. A. Chaplygin, whose works in the field of mechanics, especially in gas dynamics, are even now of great importance in cosmonautics (e.g. when calculating trajectories for the descent to Earth of a space vehicle), N. I. Kibal'chich, D. I. Mendeleyev, N. Ye. Zhukovskiy, Sof'ya Vasil'yevna Kovalevskaya, A. S. Popov, I. P. Pavlov and Konstantin Eduardovich Tsiolkovskiy, who first introduced the idea of using multistage rockets for the conquest of space, produced a theoretical design for these rockets and made many valuable suggestions regarding the equipment of space craft. In fact, at a press-conference Gagarin stated that the conditions he encoun- ✓

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A victory for human genius

tered during his flight differed little from those described by Tsiolkovski in his works. Later, due to the efforts of the Soviet government, cosmic research in the Soviet Union developed rapidly, finally outstripping even the USA. Soviet rocket engineering and cosmic research was marked by its comprehensiveness. Increasingly powerful boosters and multistage rocket systems permitted construction of heavier and heavier space craft: the first artificial satellite of the Earth weighed a little over 80 kg, the second carried equipment which alone weighed over 500 kg, and the third weighed 1327 kg. The weight increase was accompanied by an improvement in the efficiency of the equipment for cosmic research, navigation, control and stabilization, consequently, the second Soviet sputnik was already capable of carrying a man. Data on the altitudinal distribution of the density of the atmosphere, obtained from the scientific equipment aboard the third sputnik, helped to solve the most difficult technical problem - returning a space vehicle to Earth. Soviet scientists gained great experience in strictly calculating complex trajectories for cosmic rockets: the second cosmic rocket hit its target exactly, reaching the Moon and leaving behind a Soviet pennant, and the third flew round the Moon. An automatic interplanetary station separated from the third cosmic rocket photographed the Moon. Before the

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photographing started the station was stabilized in respect to the Moon and the Sun, a special system of stabilization eliminated all rotation arising upon separation from the rocket, and another control system turned the station so that its axis lay on a straight line between the Moon and the Sun, in which position it remained during the photographing. Similar control and stabilization systems were later developed for heavy space craft. The later superheavy space vehicles had cabins for manned space flight. A large team of physicists, medical scientists, instrument builders, technologists and other specialists produced the equipment for maintaining the required physiological conditions in the cabin. Automation specialists devised reliable systems for the return to Earth. Special devices had to be devised for keeping the cosmonaut's body in the position recommended by experts for different loads. The pilot had to be trained to withstand the heavy inertia overloads, which particularly affected the eyes and heart. However, the state of weightlessness was not found a problem by Gagarin (earlier observations of experimental animals put into space had shown that living organisms are not affected by weightlessness); he could work, eat and drink normally. The space ship also had to be brought out of its orbit on to a trajectory returning it to the Earth at any moment. This meant that the craft had to

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have special systems for controlling its flight in airless space, including systems for turning it so as to stabilize it in a normal position during orbit. The longitudinal axis had to be always tangential to the trajectory of the center of gravity. There were to be no oscillations of the space ship about its own center of gravity: this was necessary for successful braking. The ship's speed had to be reduced to a minimum upon entry into the denser layers of the Earth's atmosphere to avoid overheating and destruction of the ship. This necessitated braking units and calculations of the descent trajectory for a given braking force. The descent trajectory had to be such as to exploit the additional aerodynamic braking force as fully as possible. The fourth and fifth sputniks carrying experimental animals, launched in March 1961, provided the scientists with valuable material on the behavior of the artificial satellite's design, functioning of the systems providing the necessary conditions for manned space flight, and the effect on living organisms of factors such as overloads arising at launching, vibration of the body of the space ship, noises caused by the rocket-carriers, weightlessness and cosmic radiation. In preparation for the flight of a man into space, tests of the rockets, control and stabilization systems, systems for maintaining correct conditions in the cabin, and the two-way radiocommunication

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systems were carried out. Preflight training of the future spaceman presented a special problem. The training included stringent medical checks, a special diet and systematic tests under ground conditions by methods designed for the flight conditions. Gagarin's historic flight on April 12, 1961 took place only after comprehensive preparations fully guaranteeing the success of the flight and the return to Earth. Gagarin did in fact successfully withstand the flight conditions, including the state of weightlessness, maintained constant two-way radiocommunication with the Earth and fulfilled his mission in all respects. The braking engine unit was brought into operation at 1025 hrs, after the Earth had been orbited, and the space craft landed in the predetermined region at 1055 hrs. Although the entire flight was carried out fully automatically, and a large part in it was played by the science of control of the processes and phenomena occurring in the material systems, a science not yet precisely defined, the flight of a man into space was of great significance. Indeed, all previous launchings of space vehicles were directed towards this end. The very idea of conquering space presupposed that man would later include the Solar system into the sphere of his immediate activity. This first space flight will doubtless be followed by other flights on orbits farther and farther from the Earth: Soviet citizens will ✓

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fly along new paths into the cosmos to reveal Nature's secrets and place them at the service of mankind. There will doubtless be spaceships carrying several cosmonauts in the future. Research into the planets of the Solar system by means of automatic interplanetary scientific stations will continue, and Soviet successes in conquering the cosmos will certainly multiply. There is 1 figure - a photo of Gagarin's head in his flight helmet. ✓

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S/549/61/000/104/002/018
D237/D304

AUTHOR: Dobronravov, V.V., Doctor of Physical and Mathematical Sciences, Professor

TITLE: D'Alembert-Lagrange and Holder principles, and equations of motion of mechanical systems with non-holonomic restraints

SOURCE: Moscow. Vyssheye tekhnicheskoye uchilishche [Trudy], no. 104, 1961. Mekhanika, 19 - 26

TEXT: The author discusses the applicability of D'Alembert-Lagrange and Holder principles to various mechanical systems pointing out their inadequacy in treating programmed systems and the limited use of such equations as those of S.A. Chaplygin, which are applicable only to the systems with ideal constraints. He then derives the natural equations of motion of a non-holonomic system which were first published by MacMillan, and states that this derivation is more detailed and simpler. It is noted that the derivation is not valid in case of non-linear (with respect to velocities), non-holonomic re-
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D'Alembert-Lagrange and Holder ...

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straints. In conclusion the author discusses the difficulties arising when the D'Alembert-Lagrange principle is used in deriving equations of motion of mechanical systems with non-linear non-holonomic restraints of 1st and 2nd order and gives an example. V.S. Novoselov Vylkovich (Roumania) and N.G. Chetayev are mentioned for their works in the field. ✓

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24.4000

AUTHOR: ~~Dobronravov, V.V.~~, Doctor of Physical and Mathematical Sciences, Professor

TITLE: Controlled systems as systems with non-holonomic constraints

SOURCE: Moscow. Vyssheye tekhnicheskoye uchilishche [Trudy], no. 104, 1961. Mekhanika, 27 - 32

TEXT: A controlled material system or process can be considered as a set of actions proceeding according to some program, and that program of the functioning of the system can be considered as a set of constraints over the parameters of the system. Hence, if the system in question is a mechanical one, then the whole apparatus of analytical dynamics can be applied to it. The author considers the mechanical system of N points B_v with masses m_v ($v = 1, 2, \dots, N$) with holonomic and non-holonomic constraints, all of which are rheonomic, and the system which in analytical dynamics bears the name of that 'with ideal constraints', and shows that in the latter case the

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reactions of constraints depend on the change of the space of virtual displacements. He then discusses systems with non-linear non-holonomic constraints and systems not consisting of points, i.e. the systems, geometrical configuration of which in presence of holonomic constraints, is described in generalized co-ordinates q_1, q_2, \dots, q_n .

In the case of a system not purely mechanical, other relations such as electrodynamical, thermodynamical etc. may appear in the equations. In conclusion, the author states that the indicated scheme of investigating the systems with non-holonomic constraints, provides the most logical approach to real controlled systems and guarantees correct results.

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3.2 200

S/549/61/000/104/004/018
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AUTHOR: Dobronravov, V.V., Doctor of Physical and Mathematical Sciences, Professor

TITLE: On the relationships between the composite magnitudes and their elements

SOURCE: Moscow. Vyssheye tekhnicheskoye uchilishche [Trudy], no. 104, 1961, Mekhanika, 33 - 37

TEXT: The author gives a series of relationships between the geometrical and kinematical elements of a point moving on the elliptic orbit, and calls them K-relationships. Three K-relationships given for the point on the elliptic orbit are said to be useful as control formulas in following the flight of a cosmic missile, where the telemetric data obtained are used in the formulas to give the numerical magnitude of the telemetring error. One relationship is given for the vertical flow about a sphere, three for the theory of elasticity and one for the information theory. There is 1 Soviet-bloc reference. ✓B

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DOBRONRAVOV, Vladimir Vasil'yevich, doktor fiziko-matem. nauk,
prof.; IVANITSKIY, V.Yu., red.; NAZAROVA, A.S., tekhn.
red.

[Technique of space flights] Tekhnika kosmicheskikh poletov.
Moskva, Izd-vo "Znanie," 1962. 39 p. (Novoe v zhizni, nauke,
tekhnike. V Seriya: Tekhnika, no.18) (MIRA 15:11)
(Space flight) (Space vehicles)

DOBRONRAVOV, V.V. (Moskva)

Five years of the space era. Mat.v shkole no.6:4-6 N-D '62.
(MIRA 16:1)
(Astronautics)